==========

Sequence Listing was accepted.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866) 217-9197 (toll free).

Reviewer: Durreshwar Anjum

Timestamp: [year=2009; month=3; day=9; hr=14; min=9; sec=18; ms=909;]

==========

Validated By CRFValidator v 1.0.3

Application No: 10567938 Version No: 4.0

Input Set:

Output Set:

Started: 2009-02-18 15:41:34.055
Finished: 2009-02-18 15:41:37.822
Elapsed: 0 hr(s) 0 min(s) 3 sec(s) 767 ms
Total Warnings: 24
Total Errors: 8
No. of SeqIDs Defined: 37
Actual SeqID Count: 37

Error code		Error Description
W	402	Undefined organism found in <213> in SEQ ID (1)
W	402	Undefined organism found in <213> in SEQ ID (4)
W	402	Undefined organism found in <213> in SEQ ID (5)
W	402	Undefined organism found in <213> in SEQ ID (6)
W	402	Undefined organism found in <213> in SEQ ID (7)
W	402	Undefined organism found in <213> in SEQ ID (8)
W	402	Undefined organism found in <213> in SEQ ID (9)
W	402	Undefined organism found in <213> in SEQ ID (10)
W	402	Undefined organism found in <213> in SEQ ID (11)
W	402	Undefined organism found in <213> in SEQ ID (12)
W	402	Undefined organism found in <213> in SEQ ID (13)
W	402	Undefined organism found in <213> in SEQ ID (14)
W	402	Undefined organism found in <213> in SEQ ID (15)
W	402	Undefined organism found in <213> in SEQ ID (17)
W	213	Artificial or Unknown found in <213> in SEQ ID (21)
E	224	<220>,<223> section required as <213> has Artificial sequence or Unknown in SEQID (21)
E	341	'Xaa' position not defined SEQID (21) POS (115)
E	341	'Xaa' position not defined SEQID (21) POS (116)
E	341	'Xaa' position not defined SEQID (21) POS (117)

Input Set:

Output Set:

Started: 2009-02-18 15:41:34.055
Finished: 2009-02-18 15:41:37.822
Elapsed: 0 hr(s) 0 min(s) 3 sec(s) 767 ms
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No. of SeqIDs Defined: 37
Actual SeqID Count: 37

Error code		Error Description
W	402	Undefined organism found in <213> in SEQ ID (22)
E	341	'Xaa' position not defined SEQID (22) POS (10)
E	341	'Xaa' position not defined SEQID (22) POS (11)
W	402	Undefined organism found in <213> in SEQ ID (23)
E	341	'Xaa' position not defined SEQID (23) POS (8)
W	402	Undefined organism found in <213> in SEQ ID (24)
W	402	Undefined organism found in <213> in SEQ ID (25)
W	402	Undefined organism found in <213> in SEQ ID (28)
W	402	Undefined organism found in <213> in SEQ ID (29) This error has occured more than 20 times, will not be displayed
W	213	Artificial or Unknown found in <213> in SEQ ID (33)
W	213	Artificial or Unknown found in <213> in SEQ ID (37)
E	341	'Xaa' position not defined SEQID (37) POS (160)

SEQUENCE LISTING

<110> Peter S.N.Rowe

<120> REGULATION OF TISSUE MINERALIZATION AND
PHOSPHATE METABOLISM BY ASARM PEPTIDES

<130> 21105.0011U2

<140> 10567938
<141> 2006-07-13

<150> PCT/us04/30530
<151> 2003-09-19

<160> 37

<170> FastSEQ for Windows Version 4.0

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<212> PRT
<213> Homo sapien

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1 5 10 15
Asp Gly Asp

<210> 2
<211> 18
<212> PRT
<213> Mus musculus

<400> 2
Arg Asp Ser Ser Glu Ser Ser Ser Ser Gly Ser Ser Ser Glu Ser His
1 5 10 15
Gly Asp

<210> 3
<211> 18
<212> PRT
<213> Rattus norvegicus

<400> 3
Arg Asp Ser Ser Glu Ser Ser Ser Ser Gly Ser Ser Ser Glu Ser Ser
1 5 10 15
Gly Asp

<210> 4

<211> 24
<212> PRT
<213> Homo sapien

<400> 4
Phe Ser Ser Arg Arg Arg Asp Asp Ser Ser Glu Ser Ser Asp Ser Gly
 1   5   10   15
Ser Ser Ser Glu Ser Asp Gly Asp
            20

<210> 5
<211> 25
<212> PRT
<213> Homo sapien

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Cys Phe Ser Ser Arg Arg Arg Asp Asp Ser Ser Glu Ser Ser Asp Ser
 1   5   10   15
Gly Ser Ser Ser Glu Ser Asp Gly Asp
            20   25

<210> 6
<211> 26
<212> PRT
<213> Homo sapien

<400> 6
Cys Gly Ser Gly Tyr Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile
 1   5   10   15
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            20   25

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<212> PRT
<213> Homo sapien

<400> 7
Ala Pro Thr Phe Gln
 1   5

<210> 8
<211> 5
<212> PRT
<213> Homo sapien

<400> 8
Asp Ser Glu Ser Ser
 1   5

<210> 9

<211> 5
<212> PRT
<213> Homo sapien

<400> 9
Ser Ser Ser Glu Ser
 1   5

<210> 10
<211> 15
<212> PRT
<213> Homo sapien

<400> 10
Ala Pro Thr Phe Gln Pro Gln Thr Glu Lys Thr Lys Gln Ser Cys
 1   5   10   15

<210> 11
<211> 19
<212> PRT
<213> Homo sapien

<400> 11
Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile Ser Pro Phe Ser Gly
 1   5   10   15
Asp Gly Gln

<210> 12
<211> 19
<212> PRT
<213> Homo sapien

<400> 12
Gly Arg Gln Pro His Ser Asn Arg Arg Phe Ser Ser Arg Arg Arg Asp
 1   5   10   15
Asp Ser Ser

<210> 13
<211> 18
<212> PRT
<213> Homo sapien

<400> 13
Asp Asp Ser Ser Glu Ser Ser Asp Ser Gly Ser Ser Ser Glu Ser Asp
 1   5   10   15
Gly Asp

<210> 14
<211> 19
<212> PRT
<213> Homo sapien

<220>
<221> VARIANT
<222> 12,14,16
<223> Xaa = a phosphorylated serine

<400> 14
Arg Asp Asp Ser Ser Glu Ser Ser Asp Ser Gly Xaa Ser Xaa Glu Xaa
 1   5   10   15
Asp Gly Asp

<210> 15
<211> 25
<212> PRT
<213> Homo sapien

<400> 15
Gly Ser Gly Tyr Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile Ser
 1   5   10   15
Pro Phe Ser Gly Asp Gly Gln Pro Phe
            20   25

<210> 16
<211> 19
<212> PRT
<213> Macaca fascicularis

<400> 16
Arg Glu Asp Ser Ser Glu Ser Ser Asp Ser Gly Ser Ser Ser Glu Ser
 1   5   10   15
Asp Gly Asp

<210> 17
<211> 525
<212> PRT
<213> Homo sapien

<400> 17
Met Arg Val Phe Cys Val Gly Leu Leu Leu Phe Ser Val Thr Trp Ala
 1   5   10   15
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            20   25   30
Glu Glu Gln Arg Gln Glu Glu Lys Asn Lys Asp Asn Ile Gly Phe His
        35   40   45
His Leu Gly Lys Arg Ile Asn Gln Glu Leu Ser Ser Lys Glu Asn Ile
    50   55   60
Val Gln Glu Arg Lys Lys Asp Leu Ser Leu Ser Glu Ala Ser Glu Asn
65   70   75   80
Lys Gly Ser Ser Lys Ser Gln Asn Tyr Phe Thr Asn Arg Gln Arg Leu
                85   90   95
Asn Lys Glu Tyr Ser Ile Ser Asn Lys Glu Asn Thr His Asn Gly Leu
            100   105   110
Arg Met Ser Ile Tyr Pro Lys Ser Thr Gly Asn Lys Gly Phe Glu Asp

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        115                 120                 125
Gly Asp Asp Ala Ile Ser Lys Leu His Asp Gln Glu Glu Tyr Gly Ala
    130                 135                 140
Ala Leu Ile Arg Asn Asn Met Gln His Ile Met Gly Pro Val Thr Ala
145                 150                 155                 160
Ile Lys Leu Leu Gly Glu Glu Asn Lys Glu Asn Thr Pro Arg Asn Val
                165                 170                 175
Leu Asn Ile Ile Pro Ala Ser Met Asn Tyr Ala Lys Ala His Ser Lys
            180                 185                 190
Asp Lys Lys Lys Pro Gln Arg Asp Ser Gln Ala Gln Lys Ser Pro Val
        195                 200                 205
Lys Ser Lys Ser Thr His Arg Ile Gln His Asn Ile Asp Tyr Leu Lys
    210                 215                 220
His Leu Ser Lys Val Lys Lys Ile Pro Ser Asp Phe Glu Gly Ser Gly
225                 230                 235                 240
Tyr Thr Asp Leu Gln Glu Arg Gly Asp Asn Asp Ile Ser Pro Phe Ser
                245                 250                 255
Gly Asp Gly Gln Pro Phe Lys Asp Ile Pro Gly Lys Gly Glu Ala Thr
            260                 265                 270
Gly Pro Asp Leu Glu Gly Lys Asp Ile Gln Thr Gly Phe Ala Gly Pro
        275                 280                 285
Ser Glu Ala Glu Ser Thr His Leu Asp Thr Lys Lys Pro Gly Tyr Asn
    290                 295                 300
Glu Ile Pro Glu Arg Glu Glu Asn Gly Gly Asn Thr Ile Gly Thr Arg
305                 310                 315                 320
Asp Glu Thr Ala Lys Glu Ala Asp Ala Val Asp Val Ser Leu Val Glu
                325                 330                 335
Gly Ser Asn Asp Ile Met Gly Ser Thr Asn Phe Lys Glu Leu Pro Gly
            340                 345                 350
Arg Glu Gly Asn Arg Val Asp Ala Gly Ser Gln Asn Ala His Gln Gly
        355                 360                 365
Lys Val Glu Phe His Tyr Pro Pro Ala Pro Ser Lys Glu Lys Arg Lys
    370                 375                 380
Glu Gly Ser Ser Asp Ala Ala Glu Ser Thr Asn Tyr Asn Glu Ile Pro
385                 390                 395                 400
Lys Asn Gly Lys Gly Ser Thr Arg Lys Gly Val Asp His Ser Asn Arg
                405                 410                 415
Asn Gln Ala Thr Leu Asn Glu Lys Gln Arg Phe Pro Ser Lys Gly Lys
            420                 425                 430
Ser Gln Gly Leu Pro Ile Pro Ser Arg Gly Leu Asp Asn Glu Ile Lys
        435                 440                 445
Asn Glu Met Asp Ser Phe Asn Gly Pro Ser His Glu Asn Ile Ile Thr
    450                 455                 460
His Gly Arg Lys Tyr His Tyr Val Pro His Arg Gln Asn Asn Ser Thr
465                 470                 475                 480
Arg Asn Lys Gly Met Pro Gln Gly Lys Gly Ser Trp Gly Arg Gln Pro
                485                 490                 495
His Ser Asn Arg Arg Phe Ser Ser Arg Arg Arg Asp Asp Ser Ser Glu
            500                 505                 510
Ser Ser Asp Ser Gly Ser Ser Ser Glu Ser Asp Gly Asp
        515                 520                 525
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<210> 18
<211> 433
<212> PRT
<213> Mus musculus

<400> 18

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 1               5                  10                  15
Ala Pro Met Pro Asn Glu Asp Arg Ser Ser Cys Gly Asn Gln Asp Ser
            20                  25                  30
Ile His Lys Asp Leu Ala Ala Ser Val Tyr Pro Asp Pro Thr Val Asp
        35                  40                  45
Glu Gly Thr Glu Asp Gly Gln Gly Ala Leu Leu His Pro Pro Gly Gln
    50                  55                  60
Asp Arg Tyr Gly Ala Ala Leu Leu Arg Asn Ile Thr Gln Pro Val Lys
65                  70                  75                  80
Ser Leu Val Thr Gly Ala Glu Leu Arg Arg Glu Gly Asn Gln Glu Lys
                85                  90                  95
Arg Pro Gln Ser Val Leu Ser Val Ile Pro Ala Asp Val Asn Asp Ala
            100                 105                 110
Lys Val Ser Leu Lys Asp Ile Lys Asn Gln Glu Ser Tyr Leu Leu Thr
        115                 120                 125
Gln Ser Ser Pro Val Lys Ser Lys His Thr Lys His Thr Arg Gln Thr
    130                 135                 140
Arg Arg Ser Thr His Tyr Leu Thr His Leu Pro Gln Ile Lys Lys Thr
145                 150                 155                 160
Pro Ser Asp Leu Glu Gly Ser Gly Ser Pro Asp Leu Leu Val Arg Gly
                165                 170                 175
Asp Asn Asp Val Pro Pro Phe Ser Gly Asp Gly Gln His Phe Met His
            180                 185                 190
Ile Pro Gly Lys Gly Gly Ala Gly Ser Gly Pro Glu Ser Ser Thr Ser
        195                 200                 205
Arg Pro Leu Ser Gly Ser Ser Lys Ala Glu Val Ile Asp Pro His Met
    210                 215                 220
Ser Gly Leu Gly Ser Asn Glu Ile Pro Gly Arg Glu Gly His Gly Gly
225                 230                 235                 240
Ser Ala Tyr Ala Thr Arg Asp Lys Ala Ala Gln Gly Ala Gly Ser Ala
                245                 250                 255
Gly Gly Ser Leu Val Gly Gly Ser Asn Glu Ile Thr Gly Ser Thr Asn
            260                 265                 270
Phe Arg Glu Leu Pro Gly Lys Glu Gly Asn Arg Ile Asn Ala Gly Ser
        275                 280                 285
Gln Asn Ala His Gln Gly Lys Val Glu Phe His Tyr Pro Gln Val Ala
    290                 295                 300
Ser Arg Glu Lys Val Lys Gly Gly Val Glu His Ala Gly Arg Ala Gly
305                 310                 315                 320
Tyr Asn Glu Ile Pro Lys Ser Ser Lys Gly Ser Ser Ser Lys Asp Ala
                325                 330                 335
Glu Glu Ser Lys Gly Asn Gln Leu Thr Leu Thr Ala Ser Gln Arg Phe
            340                 345                 350
Pro Gly Lys Gly Lys Ser Gln Gly Pro Ala Leu Pro Ser His Ser Leu
        355                 360                 365
Ser Asn Glu Val Lys Ser Glu Glu Asn His Tyr Val Phe His Gly Gln
    370                 375                 380
Asn Asn Leu Thr Pro Asn Lys Gly Met Ser Gln Arg Arg Gly Ser Trp
385                 390                 395                 400
Pro Ser Arg Arg Pro Asn Ser His Arg Arg Ala Ser Thr Arg Gln Arg
                405                 410                 415
Asp Ser Ser Glu Ser Ser Ser Ser Gly Ser Ser Ser Glu Ser His Gly
            420                 425                 430
Asp
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<210> 19
<211> 435
<212> PRT
<213> Rattus norvegicus

<400> 19
Met Gln Ala Val Ser Val Gly Leu Phe Leu Phe Ser Met Thr Trp Ala
 1   5   10   15
Ala Pro Lys Leu Asn Glu Asp Gly Ser Ser Gly Gly Asn Gln Gly Asn
            20   25   30
Ile His Leu Ala Ser Val Lys Pro Glu Pro Met Val Gly Lys Gly Thr
        35   40   45
Glu Gly Gly Arg Asp Ala Pro Leu His Leu Leu Asp Gln Asn Arg Gln
    50   55   60
Gly Ala Thr Leu Leu Arg Asn Ile Thr Gln Pro Val Lys Ser Leu Val
65   70   75   80
Thr Gly Thr Glu Val Gln Ser Asp Arg Asn Lys Glu Lys Lys Pro Gln
                85   90   95
Ser Val Leu Ser Val Ile Pro Thr Asp Val His Asn Thr Asn Asp Tyr
            100   105   110
Ser Glu Asp Thr Glu Asn Gln Gln Arg Asp Leu Leu Leu Gln Asn Ser
        115   120   125
Pro Gly Gln Ser Lys His Thr Pro Arg Ala Arg Arg Ser Thr His Tyr
    130   135   140
Leu Thr His Leu Pro Gln Ile Arg Lys Ile Leu Ser Asp Phe Glu Asp
145   150   155   160
Ser Ala Ser Pro Asp Leu Leu Val Arg Gly Asp Asn Asp Val Pro Pro
                165   170   175
Phe Ser Gly Asp Gly Gln His Phe Met His Thr Pro Asp Arg Gly Gly
            180   185   190
Ala Val Gly Ser Asp Pro Glu Ser Ser Ala Gly His Pro Val Ser Gly
        195   200   205
Ser Ser Asn Val Glu Ile Val Asp Pro His Thr Asn Gly Leu Gly Ser
    210   215   220
Asn Glu Ile Pro Gly Arg Glu Gly His Ile Gly Gly Ala Tyr Ala Thr
225   230   235   240
Arg Gly Lys Thr Ala Gln Gly Ala Gly Ser Ala Asp Val Ser Leu Val
                245   250   255
Glu Gly Ser Asn Glu Ile Thr Gly Ser Thr Lys Phe Arg Glu Leu Pro
            260   265   270
Gly Lys Glu Gly Asn Arg Val Asp Ala Ser Ser Gln Asn Ala His Gln
        275   280   285
Gly Lys Val Glu Phe His Tyr Pro Gln Ala Pro Ser Lys Glu Lys Val
    290   295   300
Lys Gly Gly Ser Arg Glu His Thr Gly Lys Ala Gly Tyr Asn Glu Ile
305   310   315   320
Pro Lys Ser Ser Lys Gly Gly Ala Ser Lys Asp Ala Glu Glu Ser Lys
                325   330   335
Gly Asn Gln Val Thr Leu Thr Glu Ser Gln Arg Phe Pro Gly Lys Gly
            340   345   350
Lys Gly Gln Ser Ser His Ser Leu Gly Asn Glu Val Lys Ser Glu Glu
        355   360   365
Asp Ser Ser Asn Ser Leu Ser Arg Glu Gly Ile Ala Ile Ala His Arg
    370   375   380
Arg Thr Ser His Pro Thr Arg Asn Arg Gly Met Ser Gln Arg Arg Gly

385 390 395 400
Ser Trp Ala Ser Arg Arg Pro His Pro His Arg Arg Val Ser Thr Arg
405 410 415
Gln Arg Asp Ser Ser Glu Ser Ser Ser Ser Gly Ser Ser Ser Glu Ser
420 425 430
Ser Gly Asp
435

<210> 20
<211> 555
<212> PRT
<213> Macaca fascicularis

<400> 20
Met Arg Val Phe Cys Val Gly Leu Leu Phe Leu Ser Val Thr Trp Ala
1 5 10 15
Ala Pro Thr Phe Gln Pro Gln Thr Glu Lys Thr Lys Gln Ser Cys Val
20 25 30
Glu Glu Gln Arg Ile Thr Tyr Lys Gly His His Glu Lys His Gly His
35 40 45
Tyr Val Phe Lys Cys Val Tyr Met Ser Pro Gly Lys Lys Asn Gln Thr
50 55 60
Asp Val Lys Gln Glu Glu Lys Asn Lys Asp Asn Ile Gly Leu His His
65 70 75 80
Leu Gly Lys Arg Arg Tyr Gln Glu Leu Ser Ser Lys Glu Asn Ile Val
85 90 95
Gln Glu Arg Lys Lys Asp Leu Ser Leu Ser Glu Ala Gly Glu Asn Asn
100 105 110
Gly Ser Ser Lys Ser Gln Asn Tyr Phe Thr Asn Arg Gln Arg Leu Asn
115 120 125
Lys Glu Tyr Ser Ile Ser Asn Lys Glu Asn Ile His Asn Gly Leu Arg
130 135 140
Met Ser Ile Tyr Pro Lys Ser Thr Gly Asn Lys Gln Phe Ala Asp Gly
145 150 155 160
Asp Asp Ala Ile Ser Glu Leu His Asp Gln Glu Glu Tyr Gly Ala Ala
165 170 175
Leu Ile Arg Asn Asn Met Gln His Ile Met Gly Pro Val Thr Ala Ile
180 185 190
Lys Leu Leu Gly Glu Glu Asn Lys Gln Ser Lys Pro Lys Asn Val Leu
195 200 205
Asn Lys Ile Pro Ala Ser Met Asn Tyr Ala Lys Ala His Ser Lys Asp
210 215 220
Lys Lys Lys Pro Gln Arg Asp Ser Gln Val Gln Lys Val Pro Val Lys
225 230 235 240
Ser Lys Ser Thr His Arg Thr Gln His Asn Ile Asp Tyr Pro Lys His
245 250 255
Leu Ser Lys Val Lys Lys Ile Pro Ser Asp Phe Glu Gly Ser Gly Tyr
260 265 270
Thr Asp Leu Gln